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Knotted Cordage from Squaw Rockshelter (33CU34), Aurora Run, Cuyahoga County, Ohio

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Abstract

A charred fragment of cordage from the late Middle Archaic level of Squaw Rockshelter represents a Z-spun, S-twist, 2-ply 4-yarn construction of bast fiber. A complex series of overhand knots cannot be attributed to specific function. With other specimens, this fragment documents an aboriginal textile industry of great antiquity in the Eastern Woodlands.

Introduction

A single piece of knotted cordage was recovered during the excavations at Squaw Rockshelter (33CU34). In the present context, cordage refers to a class of elongate fiber constructions which herein includes *only* knotted cordage.

Methods

The single artifact thus distinguished was classified according to the ply (1, 2, or more); the direction of initial spin (S or Z); and the direction of final twist (S or Z). Also, the specimen was scrutinized for the number and types of knots present. Knots were identified and described according to the terminology contained in Shaw (1972). All pertinent measurements were made with a Helios needlenose sliding dial caliper, and angles were measured with a protractor. Measurements taken follow the specifications of Emery (1966). The single piece of cordage recovered from the site is ascribable to one basic construction type which is described below.

Description Type 1: Four-ply, Z-spun, S-twist Cordage

Technique and comments

This construction essentially consists of four Z-spun single elements with a final S-twist (Figure 1a, b). The specimen has been knotted at both ends in the following fashion. Initially, two unspun, single-ply elements were

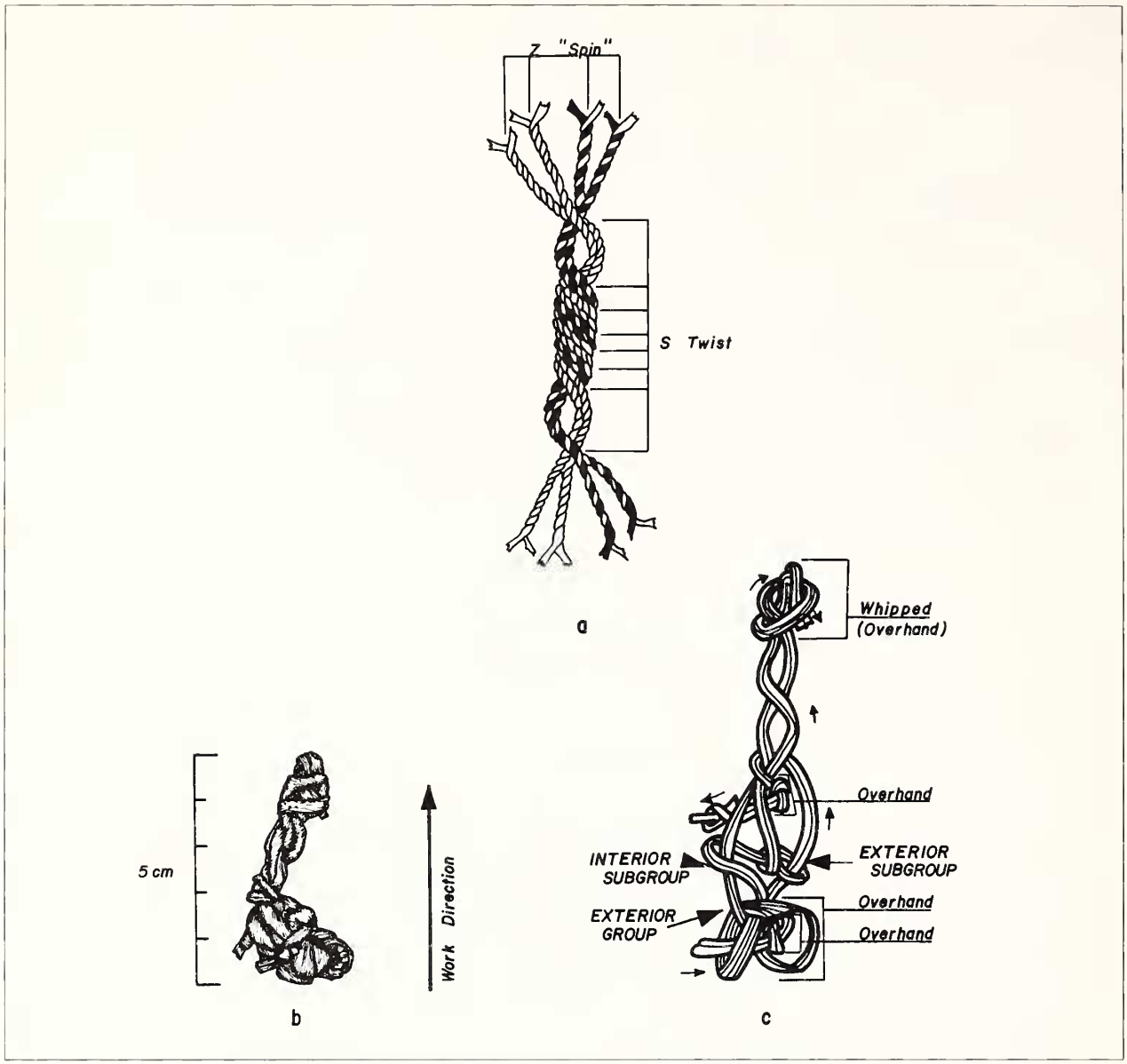

FIGURE 1. *Reconstruction of Squaw Rockshelter Cordage: a — twisted yarns and plys; b — knotted element; c — reconstruction groups and knots*

knotted near their passive ends with an overhand knot. These elements were laid next to another pair of unspun elements, and the free ends were then manipulated into another overhand knot. Of the eight emergent ends, six were further manipulated while two remained inactive. These elements extend from the knot in groups of two and four. At this point, a slight spin was imparted to those six elements (the term spin denotes only initial twisting and not spinning as that term is used in describing yarn preparation). The bundle of four elements was immediately divided into two groups of two each. The resultant pattern of free ends is 2-2-2, and these units are labeled exterior group, interior subgroup, and exterior subgroup, respectively.

The interior subgroup was looped around the exterior group and subgroup as shown (Figure 1c) and was finally combined with the exterior group of fibers. The exterior subgroup of elements was looped around and behind the other four elements, and its two plys were knotted into an overhand knot, then ended by wrapping one ply around the other and tucking under its loose end. The remaining four actively spun elements were again subdivided into two groups and S twisted. Each group functioned essentially as one element for *ca.* 2cm after which the subgroups were united again. The entire construction was then terminated by whipping. The final whipping knot is the functional equivalent of an overhand noose and is the fourth in a series of overhand knots.

The specimen is thoroughly charred and highly friable. The function of this construction is unknown.

Raw material

All elements of this specimen are constructed with an unknown genus and species of plant material. Fred H. Utech (1980, pers. com.) suggested that this raw material consisted of grass or sedge leaves. Richard I. Ford (1987, pers. com.) however, suggested to Brose that the material was some sort of bast fiber. More specifically, James K. Bissell and David S. Brose (1987, pers. com.) suggest the specimen was made of cedar (*Juniperus* spp.) or hemlock (*Tsuga* spp.) root. Pollen diagrams in the region of the site indicate that although cedar and spruce were moderately abundant at *ca.* 10,000 B.P., they had vanished by 6500 B.P. whereas hemlock appeared *ca.* 7500 B.P. and is still a ravine dominant (Brose, this volume). The method of preparation of the raw material is unknown.

Length — 6.40cm

Range in diameter of individual Z-spun elements — 1.75-2.70mm

Mean diameter of individual Z-spun elements — 2.23mm

Range in diameter of two-ply units — 2.70-4.65mm

Mean diameter of two-ply units — 3.68mm

Range in diameter of finished four-ply eordage — 6.95-7.05mm

Mean diameter of finished four-ply cordage — 7.00mm

Number of twists per cm — 1

Angle of twist: 28°

Provenience and Chronology

This single specimen of cordage is ascribable to a level in excavation unit 2 of the shelter which has been radiocarbon dated at *ca.* 5300 B.P.

Internal Correlations

Despite the paucity of the data, a number of observations can be made on the cordage construction from Squaw Rockshelter. First, the single specimen is *de facto* proof that a relatively sophisticated cordage industry existed in this part of the Midwest in the mid-fourth millennium B.C. Second, the specimen is technically well-made and exhibits all of the "earmarks" of a complex perishables industry. Specifically, the diameter of the individual elements is remarkably consistent. The knots, though simple, are combined in a complicated fashion, and the overall impression of the piece suggests that its makers were more than casually familiar with the manipulation of string and rope.

The function of this particular specimen is unknown, but it could represent one of a variety of items, such as knotted fringe from a skirt or loin covering, a bundle of twined basketry construction material, a part of a snare or trap, or, perhaps, a "doodle" fashioned for no specific purpose. Whatever its function, we stress that this item was manufactured by an individual who was no stranger to the production of high-quality cordage.

External Correlations

The specimen under discussion represents at once the oldest well-dated piece of cordage recovered in the state of Ohio as well as one of the older pieces of cordage ever recovered east of the Mississippi River. Far older cordage materials are known from western North America where they are ascribable to at least the 11th millennium B.C. (see Adovasio 1974, 1977). Other early specimens are known from portions of Mesoamerica (Taylor 1966; MacNeish et al. 1967) and South America (Adovasio and Lynch 1973). Actual specimens of cordage or, indeed, any other kind of perishables from the eastern United States are relatively uncommon. Though it has been widely assumed that the perishable industries of Archaic populations east of the Mississippi were as old and as complex as those in the arid West, actual proof is somewhat difficult to acquire because of factors of preservation. This is the principal value of the piece from Squaw Rockshelter as well as the scattered perishable remains from localities with PaleoIndian and/or Archaic period components, such as Meadowcroft Rockshelter, Pennsylvania (Stile 1982); Petit Anse Island, Louisiana (Wilson 1888: Figure CVII); Graham Cave, Missouri (Logan, 1952); Icehouse Bottom, Tennessee (Chapman and Adovasio 1977); the Harts Falls site, Maine (James L. Petersen 1984, pers. com.); Russell Cave, Alabama (Griffin 1974); the Long Branch site, Alabama (Webb and DeJarnette 1942); Salts Cave, Kentucky (King 1974); the Ozark Bluff Shelters, Arkansas (Schotz 1975); the Picton site, Ontario, Canada (Ritchie 1949); the Riverside site, Michigan (King 1968); and the Windover site, Florida.

Cordage remains *per se* are limited in distribution to Icehouse Bottom (Chapman and Adovasio 1977: 622), Salts Cave (King 1974), the Picton site (Ritchie 1949), and the Ozark Bluff Shelters (Scholtz 1975). However, multiple-ply warp and/or weft elements produced via eordage-making techniques are identifiable in twined basketry and/or fabric from a variety of Archaic period sites including Graham Cave (Logan 1952: Plate XXIc), Icehouse Bottom (Chapman and Adovasio 1977), Salts Cave (King 1974), the Riverside site (King 1968), and Windover.

While both final S- and/or Z-twist cordage and cordage warps/wefts are represented in the aforementioned assemblages, the diversity of both geographic and chronological distributions precludes any statistically significant correlation of twist types. Taken as a unit, these widely distributed remains indicate that populations east of

the Mississippi did possess a complex and technologically sophisticated cordage and basketry industry of an antiquity comparable to those in the Desert West. It is also interesting to note that although the production of cordage and basketry from grass stems is ethnographically well documented in the Great Lakes region (Jones 1936; Douglas 1939), the use of "soft," bast fibers is widespread among both prehistoric and ethnographic populations (Driver and Massey 1957; Spencer and Jennings et al. 1977; Holmes 1896; Mason 1904; Swanton 1946). Unfortunately, the condition of the Squaw Shelter specimen precludes both an exact identification of raw material and also the "method(s)" of its preparation. Presumably, the recovery of more materials such as the piece described here will greatly augment the very dim picture we presently possess of the production of perishables in portions of eastern North America. △

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